IN THE UNITED STATES PATENT & TRADEMARK OFFICE

In re Application of:	Jessy Rouyer	:	Paper No.:
Serial No.:	10/674,220	:	Group No.: 2472
Filed:	September 29, 2003	:	Examiner: Andrew W. Chriss
Title:	Bridged Network System With Traffic Resiliency Upon Link Failure		

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/Martha Rocha/
Signature

AMENDMENT

Dear Sir/Madam:

This is a RCE in response to a final office action dated February 3, 2011. Applicant requests reconsideration of the above-identified application in view of the amendments and remarks presented herein.

AMENDMENT TO THE CLAIMS

1. (currently amended) A bridged network system, comprising:

a plurality of nodes;

wherein each node in the plurality of nodes is coupled to communicate with at least one other node in the plurality of nodes;

wherein the plurality of nodes comprise a bridge network between external nodes located externally from the plurality of nodes; and

wherein each node of the plurality of nodes is operable to perform the steps of:

receiving a packet, wherein the packet comprises a route indicator field further comprising at least one bit that indicates a link type;

responsive to the packet being received prior to a time of failure along a communication link between two of the plurality of nodes, transmitting the packet along a first route in the system to another node in the plurality of nodes; and

responsive to the packet being received after a time of failure along a communication link between two of the plurality of nodes and in response to a change of state of the at least one bit that indicates the link type in the route indicator field in response to a node detecting a link failure, transmitting the packet along a second route in the system to another node in the plurality of nodes, wherein the second route differs from the first route and is identified prior to the time of failure and wherein the change of state of the at least one bit that indicates the link type in the route indicator field is performed by the same node that is responsible for detecting a link failure and for receiving and transmitting the packet.

2. (previously presented) The bridged network system of claim 1 wherein the packet comprises a first packet and wherein each of the plurality of nodes is further operable to perform the steps of:

determining a third route in the system after the time of failure;

receiving a second packet after the first packet; and

transmitting the second packet along the third route to another node in the plurality of nodes.

3. (original) The bridged network system of claim 2, and further comprising after the step of receiving the second packet and prior to the step of transmitting the second packet, a step of changing a state of the route indicator field to cause transmission to the third route.

4. (original) The bridged network system of claim 3 wherein the step of transmitting the packet along a first route comprises:

identifying a transmit port in the node that corresponds to a destination address in the packet, wherein the destination address corresponds to a node external from the plurality of nodes; and

transmitting the packet via the transmit port to the first route.

5. (original) The bridged network system of claim 4 wherein the step of transmitting the packet along a third route comprises:

identifying a transmit port in the node that corresponds to a destination address in the packet, wherein the destination address corresponds to a node external from the plurality of nodes; and

transmitting the packet via the transmit port to the third route.

6. (original) The bridged network system of claim 2 wherein the receiving step comprises a node, adjacent to a failure in the first route, receiving the second packet.

7. (previously presented) The bridged network system of claim 2, and further comprising after the step of receiving the second packet and prior to the step of transmitting the second packet, a step of setting a value of a route indicator field in the second packet to cause transmission to either the first or second route.

8. (previously presented) The bridged network system of claim 1 wherein the step of transmitting the packet along a second route comprises:

identifying a transmit port in the node that corresponds to a receipt port in the node; and

transmitting the packet via the transmit port to the second route wherein the packet is a data packet.

9. (original) The bridged network system of claim 8 wherein the transmitting step is not responsive to a destination address within the packet.

10. (original) The bridged network system of claim 1 wherein multiple ones of the plurality of nodes are operable to receive and transmit the packet along the second route until the packet reaches an egress node in the plurality of nodes.

11. (original) The bridged network system of claim 10 wherein the transmission by each node in the multiples ones of the plurality of nodes:

identifying a transmit port in the node that corresponds to a receipt port in the node; and

transmitting the packet via the transmit port to the second route.

12. (original) The bridged network system of claim 1:

wherein a first node in the plurality of nodes that receives a packet from a first external node of the external nodes located externally from the plurality of nodes comprises an ingress node;

wherein a second node in the plurality of nodes that is coupled to communicate the packet to a second external node of the external nodes located externally from the plurality of nodes comprises an egress node; and

further comprising a step of, responsive to a node in the plurality of nodes receiving a packet as an ingress node, inserting an address of the ingress node and the egress node into the packet.

13. (original) The bridged network system of claim 12:

wherein the step of transmitting the packet along either the first route or the second route comprises:

identifying a transmit port in the node that corresponds to the address of the egress node in the packet; and

transmitting the packet via the transmit port to either the first or second route.

14. (original) The bridged network system of claim 13 wherein the step of transmitting the packet along either the first route or the second route is further responsive to the route indicator field in the packet to cause transmission to either the first route or the second route, respectively.

15. (original) The bridged network system of claim 14 wherein the packet further comprises a field for indicating allowability of an ingress node or a node adjacent a failure to change a state in the route indicator field.

16. (original) The bridged network system of claim 12 wherein the first route and the second route are routes in a plurality of different routes, wherein each route in the plurality of different routes is identified prior to the time of failure.

17. (original) The bridged network system of claim 16 wherein each route in the plurality of different routes is identified by a corresponding and different value in the route indicator field.

18. (original) The bridged network system of claim 16 wherein the packet further comprises a VLAN identifier field operable to identify each different route in the plurality of routes so as to facilitate a broadcast message to all nodes on an identified route.

19. (original) The bridged network system of claim 18 wherein the VLAN identifier field facilitates registration of selected different routes in the plurality of routes.

20. (original) The bridged network system of claim 16 wherein the packet comprises a first packet and wherein each node of the plurality of nodes is further operable to perform the steps of:

determining a third route in the system after the time of failure;

receiving a second packet after the first packet; and

transmitting the second packet along the third route to another node in the plurality of nodes.

21. (canceled)

REMARKS

In a February 3, 2011 final office action, Examiner rejected claim 1 (the only independent claim) under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 7,061,876 ("Ambe") in view of United States Patent Application No. 2003/0223358 ("Rigby") and further in view of U.S. Patent No. 7,197,008 ("Shabtay").

Applicant previously argued that claim 1 distinguishes over the Ambe, Rigby and Shabtay references because it claims "receiving a packet, wherein the packet comprises a route indicator field further comprising at least one bit that indicates a link type" and "responsive to the packet being received after a time of failure along a communication link between two of the plurality of nodes and in response to a change of state of the at least one bit that indicates the link type in the route indicator field in response to a node detecting a link failure, transmitting the packet along a second route in the system to another node in the plurality of nodes, wherein the second route differs from the first route and is identified prior to the time of failure."

In describing these limitations involving a route indicator field, the application states in relevant part:

> Figure 2 illustrates a packet format 20 according to a preferred embodiment and for use in connection with system 10 of Figure 1a. Packet format 20 includes various fields as known in the Ethernet art, and only some of which are shown by way of example. These fields include a source address field 20_1, a destination address field 20_2, a length field 20_3 and a data payload field 20_4. Other fields, although not shown, may be included as also known in the art, such as

> a preamble and a packet (or frame) start field. According to the preferred embodiment, however, packet format 20 includes an additional field 20_5, referred to hereafter as a link type field 20_5. Link type field 20_5 is so named because, as shown below, the state of the field indicates the type of link on to which the packet is routed, with one state in field 20_5 (e.g., 0) indicating a spanning tree link and another state in field 20_5 (e.g., 1) indicating a bypass link along system 10. In the preferred embodiment, link type field 20_5 is a one-bit field and it is contemplated that it could be a bit provided as an addition to existing Ethernet frames or, alternatively, it could be a bit that is already in the Ethernet frame yet where the function of that bit is changed to be consistent with the functionality described in this document as relating to link type field 20_5.

See Patent Application, p. 9. The Application further states:

> When a failure occurs in a link in system 10, that failure is detected according to known protocols. However, as an enhancement in a preferred embodiment, in response to the failure detection, a node within system 10 changes the state of link type field 20_5 so that each packet so changed will be routed along a bypass link, where recall by way of example that a binary value of 1 in link type field 20_5 causes this effect. Further, when a node within system 10 receives a packet with a binary value of 1 in its link type field 20_5, the receiving node does not consult its forwarding table for purposes of further routing the received packet, but instead it consults its bypass table to determine the next route for the received packet.

See Patent Application, p. 11. The route indicator field is further defined by Applicant as follows:

> In system 10, the route indicator field is a link type field 20_5, operable to indicate that the packet is to continue along a spanning tree route or a bypass route. In system 10', the

> route indicator field is a link set field $20'_3$, operable to indicate that the packet is to continue along a first set of links forming a first route, a second set of links forming a second route, and so forth for up to 2^M sets of links corresponding to a respective number of 2^M routes.

Examiner cited Shabtay as disclosing some of the language in the "responsive to the packet being received after a time of failure along a communication link between two of the plurality of nodes and in response to a change of state of the at least one bit that indicates the link type in the route indicator field in response to a node detecting a link failure, transmitting the packet along a second route in the system to another node in the plurality of nodes, wherein the second route differs from the first route" limitation.

However, the cited portion of Shabtay (column 13, lines 3-18) discloses a local protection flag bit being added to the flags field of an operation, administration and maintenance (OAM) packet to notify edge nodes of the use of local protection tunnels along a path. The network processor associated with a failed link examines the inbound packets received from each link and if an OAM packet has also been received, it is checked if the packet is to be sent over the protection tunnel. In each OAM message to be rerouted to the protection tunnel, the network processor sets the local protection bit. Hence, Shabtay involves adding a flag bit to the flag field of the OAM packet at an intermediate node rather than changing the state of an existing bit in a packet at a receiving node. In other words, Shabtay's flag bit is not contained within the inbound packet at the node receiving/transmitting the packet but is added to a separate packet (OAM packet) at

an intermediate node and sent as a notification mechanism to indicate that local protection is in place along a certain path.

In the final office action, Examiner indicated that the present claim language does not expressly require that the changing of the state of the at least one bit indicating the link type is performed by the node receiving and transmitting the packet. In other words, the claim language does not require that the receiving/transmitting node be the same as the node detecting a link failure. Therefore, Examiner submits that the current claim language, given its broadest reasonable interpretation, permits that the receiving/transmitting node may receive a packet comprising a bit that has already changed state at an intermediate node. Accordingly, Applicant has made appropriate amendments to independent claim 1 to further distinguish over the cited prior art.

Applicant respectfully requests the Examiner withdraw the rejection and allow pending Claim 1. In addition, all claims depending from Claim 1 either directly or indirectly, including Claims 2-20, are also allowable for the reasons discussed in conjunction with Claim 1.

CONCLUSION

Applicant has made an earnest attempt to place this case in condition for allowance. For the foregoing reasons and for reasons clearly apparent, Applicant respectfully requests full allowance of all pending claims. If there are any matters that can be discussed by telephone to further the prosecution of this Application, Applicant invites the Examiner to contact the undersigned attorney at 512-306-8533 at the Examiner's convenience.

Respectfully submitted,

By: /Gregory S. Donahue/
Gregory S. Donahue
Reg. No. 47,531

Correspondence Address:
Alcatel Lucent
c/o Galasso & Associates, LP
P.O. Box 26503
Austin, Texas 78755-0503
(512) 306-8533 telephone
(512) 306-8559 fax